

## Urban Transportation Planning

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I am always happy to have the opportunity of meeting with highway officials and I am especially glad to be in Kentucky today to exchange greetings with an old friend-Commissioner Henry Ward. Having so recently left the Bureau of Public Roads you will probably find my remarks on Urban Transportation Planning a mixture of Bureau and Highway Research Board philosophies. This is natural however, since all of us in the highway transportation business must work together on common objectives.

We, in the Board are happy that Bill Drake has consented to be Chairman of the Department of Design and that the highway department and university are so generous in permitting their research men to work on Board committees. We are sure that large dividends will accrue to all in this truly cooperative effort.

I believe that we can all agree that an efficient and dynamic transportation system is vital to the nation's domestic economic growth, productivity, and progress.

Future patterns of transportation and the future patterns of land use cannot be considered separately. Planning for future needs must give recognition to the changes in the location of people-the added urban development which is occurring, and the resulting requirement for greater emphasis on comprehensive transportation planning in urban areas.

We cannot shut our eyes to the fact that uncontrolled land development and inadequate planning for transportation needs have just about strangled many of our cities. In the largest cities commuter service has deteriorated to the point where major efforts will be required if it is to be revived. Lack of facilities and controls are making truck operation increasingly costly. Time saved by air travel between cities is quickly dissipated by congested ground traffic within the cities.

Continuation of many of our traditional policies, or "freezing" of present uncoordinated planning efforts, will crystalize these deplorable conditions beyond hope of ever correcting them without prohibitive cost. There is indeed a great challenge to community leaders to move ahead quickly and boldly to insure rational and healthy community development.

The trends of the past give a clue as to what we may expect in the future. Clearly, our transportation patterns in the future will be largely influenced by the kind of cities we develop. To get this into full perspective, we must recognize that by 1980, our national population will be about 245 million, nearly 185 million of which will be in urban areas.

An idea of the growth of the traffic problem can be obtained by noting that increases in the Gross National Product closely parallel the increases in automobile travel. This would indicate that vehicle-miles of passenger travel by auto nearly double every 20 years. There were approximately one trillion vehicle-miles of passenger travel by car in 1960. By 1980, there will be two trillion.

Of the total travel of all passengers in 1960, roughly 390 billion passenger miles were intra-city, which, by mode of travel, were accounted for as follows:

90% automobile; 8% transit; 2% commuter. In terms of passenger miles, this breaks down to 350 billion for automobiles; 31.2 billion for transit; and 7.8 billion for commuter trains. Assuming that transit riding does not decline further and that the ratio of use between modes remains the same, then, in 1980, the passenger mile figures in urban areas will be 702 billion by auto; 62.4 billion by transit; and 15.6 billion by commuter.

Let us suppose, however, that by 1980 transit and commuter service can be greatly improved, new facilities built and usage doubled. With this assumption, passenger miles by auto would decline to 80% of the total. We would, therefore, have to provide facilities for intra-city passenger travel as follows: by automobile, 624 billion passenger miles; by transit, 124.8 billion; and by commuter facilities, 31.2 billion.

So you can see that even allowing for maximum improvement and usage of transit, the demands of automobile travel will be so enormous that there must be no delay in providing critically needed urban highway improvements and parking facilities, not only in the newly developing suburbs but in the older, well established cities.

The needs associated with this increase in travel and the anticipated growth of the urban area certainly warrant serious consideration as to how we should plan for the future. Perhaps new concepts in urban development and transportation improvements are called for.

Perhaps we should question the whole approach to transportation planning which we have used in the past. Formerly we tended to take the city planner's projections of land development as the basis for transportation plans. But now transportation people realize they must work more closely with the city planner to tie in land uses more effectively with the transportation plans and thus make the city more convenient generally. Moreover, we must fully understand the implications of the tremendous growth occurring in our urban areas. Fortunately, an increasing number of cities in the United States are making an earnest effort to do this. They are undertaking comprehensive land use and transportation studies to bring their future needs into focus. Many of these studies are based upon the fact-gathering techniques developed and recommended by the National Committee on Urban Transportation.

The Highway Act of 1962 makes it a requisite for Federal aid that the planning processes we have been developing through the years be in existence in all cities over 50,000 by 1965. Thus there has been formalized as a requirement of law, what we have been advocating for years simply on its merits.

In these urban planning efforts, officials must constantly be aware that they are dealing not only with the people's money, but with their daily activities and their way of life. Highways are unquestionably a key factor in a city's economic and social growth. What form that growth will take, or even whether it will occur at all, depends on the needs and the desires and the particular circumstances of each individual city.

Industry, wholesale and distributing establishments, and residential developments will cluster about interchanges on an outer circumferential loop. Already this pattern is being established in city after city, even in anticipation of freeways not yet completed. An inner loop may ring the central business district, studded with parking facilities. Planners will use the radial freeways as dividers, separating land uses so that residences and factories aren't intermingled, for example. To this end, highway planning and urban renewal development are now being closely coordinated, through the cooperative efforts of the Bureau of Public Roads and the Housing and Home Finance Agency.

Rail transit systems will be improved or built in the very largest metropolitan areas, the freeways and rails providing complementary service. More commonly, I will expect to see express bus transit operation on the freeway network, on lanes specially designated for their exclusive use at least during rush hours. Our study of future needs, then, will be a total transportation study involving rural and urban areas, motor and rail transit, mass transportation and individual motorist movements, all that is involved in the movement of people and goods in a way that best provides for the public interest.

Transportation studies in the future will have to probe more deeply into sociological aspects. Political implications of following one alternative as against another will have to be taken into account, along with economic factors.

Nor are urban transportation problems confined to the large metropolitan areas. Smaller communities likewise have urgent transportation problems and, since they are dependent almost entirely upon motor vehicle service, their needs too must be carefully studied and met. In many communities trucks are the sole means of freight delivery and pick-up. If railroad mileage continues to dwindle, particularly on feeders or spurs, then the number of towns looking to trucks and buses for service will increase. Facilities for movement and for terminals will have to be created or expanded.

We must remember, too, that added new facilities in both large and small urban areas will not provide a complete solution to the future transportation problem. Existing streets will require physical and operational improvements. Much more efficient use will have to be made of present streets if tomorrow's travel increases are to be accommodated.

Existing streets will have to be coordinated with the new facilities so that all operate as a system. Terminal facilities will have to be expanded and geared into the transportation systems. Improved control devices will be needed. Extensive application of new electronic aids will doubtless be required to move ever-growing vehicular volumes efficiently and safely over street systems that capacity-wise are relatively static.

Perhaps the greatest need of all in trying to meet future urban transportation needs is a thorough-going evaluation of the functions and administrative structure. In any first-things-first approach, this is imperative to carry out the complex urban planning and transportation job.

To sum up, the urban transportation challenge in the Sixties poses these three inescapable questions:

1. What form should the city take and what role should transportation play?
2. How can transportation requirements be reduced to a minimum?
3. How can we achieve a sound balance between the various forms of transportation?

These are questions upon which hinges the future prosperity of our cities and metropolitan areas. To find the right answers and implement them expeditiously and with true economy will call for teamwork on the part of many people. It will require coordination and mutual understanding among our political leaders and our technical people, including highway engineers, traffic engineers, transit officials and city planners.

And here let me make a plea that we leave the job to these dedicated professional people and not be diverted from sound objectives by perhaps well-intentioned but uninformed individuals or groups intrigued by "pie in the sky" panaceas. Too often opposition to factually determined and urgently needed transportation improvements is motivated, not by considerations of broad public interest, but by the special interest of a highly vocal minority.



In light of the tremendous stakes involved, from the standpoint of our communities themselves and the country as a whole, the challenge must be met head on. For, as population growth trends plainly indicate, the well-being of our metropolitan areas will largely determine our national strength and progress in the years ahead.

Now, in closing I would like to discuss briefly the role the Highway Research Board is playing and hopes to play in the broad field of urban transportation.

Ten years ago last month, Dr. Detlev W. Bronk, then President of the National Academy of Sciences, challenged the Board to attempt effective research in urban areas as a means of making life there more satisfactory. A few months later in the Spring of 1954, a special Council-committee meeting under the joint sponsorship of the Academy and the National Research Council determined to set up an ad hoc group. This committee functioned as every Highway Research Board group does, starting out by identifying certain areas of research needing attention, developing research programs and projects, serving as a clearing house, screening projects for financing, and when possible, arranging for financing of a project, and finally, disseminating the results of research.

From 1956 until 1959, the Committee on Urban Research operated with funds provided by the Automotive Safety Foundation. Its principal activity was a conference on Transportation and Urban Development co-sponsored by Syracuse University and the Joint Committee on Highways of the American Municipal Association and the American Association of State Highway Officials. This meeting, known as the Sagamore Conference, laid down some premises which are recognized as the foundation stones for intergovernmental cooperation in the planning process. The principal points were that planning must include all levels of government and all jurisdictions, that planning should be a continuing activity, and that planning must be carried through to the capital improvement program stage before it can be effective.

During 1959 and 1960, the committee prepared a Framework for Urban Studies which further advanced the cooperative concept and in the summer of 1960 the National Academy of Sciences sponsored the month long Woods Hole Conference on Transportation Research. It was in 1961, however, that a truly massive attack on urban problems was made. In September of 1961, a distinguished group of 60 men from a variety of disciplines came to the Academy and divided the urban problem into five parts—land use, personal desires, economic impacts, public programs and urban governments.

Each panel prepared a report, submitted it to open meetings for discussion with the entire group, and revised its report thoroughly and carefully. In mid-1962, the Board published "A Key to Change: The Needs of Urban Transportation Research." This was a blueprint of one hundred and nineteen areas where research was needed to clarify, to enlighten, to simplify the accomplishment of integrated planning objectives. Since it represented a synthesis of opinions from the men and organizations who are confronted with the urban problem in a most intimate and positive way, this report, HRB Special Report 62, has been widely accepted and implemented.

The Board's Special Committee has itself added to the value of its report by the public sessions it has held during the annual meeting in January 1963 and January 1964. Its full-day program last year was devoted to "Community Values as Affected by Transportation," which included papers contributed by architects, sociologists, and urban renewal authorities. Last month, the Committee sponsored a half-day summary of successful urban transportation studies of varying magnitude, and another half-day panel exploring top issues in the urban research field, in-

cluding development of a land use data bank for transportation planning, and an analysis of the costs of urban transport systems of varying capacity and service.

But the major effort to seek out answers to the multiple questions is being made with the establishment of the Board's new Department of Urban Transportation Planning. The department will mount a continuing program of research into all facets of urban transportation to arrive at solutions which will reasonably meet consumer preferences. This cannot be done by a special committee or any ad hoc or temporary group. It requires staff and an assignment of qualified men dedicated to an examination of specific projects.

The department has set up six working committees of approximately fifteen members each. Their chairmen include two civil engineers, two planners, and two administrators. The members of these committees are representative of a wide variety of disciplines. There are engineers, to be sure, but there are also sociologists, psychiatrists, physicians, political officials, highway experts, transit executives—perhaps the most complete spectrum of disciplines of any Highway Research Board undertaking.

The span of their research interest is as follows:

The committee on Organization and Administration, chaired by Wilber Smith, director of the Association of Bay Area Governments, Berkeley, California, will look into legal and financial aspects of planning, intergovernmental relations and effective communication between the planning group and the citizens of the communities.

The committee on Land Use Evaluation, headed by F. Stuart Chapin, Jr., of the Center for Urban and Regional Studies, University of North Carolina, will encourage research into patterns of urban land use related to transportation, including factors which influence land use and techniques of forecasting urban growth.

The committee on Community Values, chaired by Fred Hayes of the Urban Renewal Administration, Housing and Home Finance Agency, will spur studies of sociological, psychological, aesthetic and socio-economic interrelations with urban transportation.

The committee on Transportation System Analysis, led by Charles L. Miller, director of the Civil Engineering System Laboratory at MIT, will seek to learn effects on one form of transportation on another in analyzing transportation facilities and modes.

The committee on Urban Measurements, under chairman John T. Howard, of MIT's Department of City and Regional Planning, will stimulate evaluation of different categories of urban information and the means of using these in the planning process.

The committee on Future Concepts, with Carl C. Saal, chief of the Bureau of Public Roads' division of traffic operations research, will examine new modes of travel, modification of existing modes and facilities and patterns of urban development in relation to transportation.

In addition to the new Department, there are projects going on under the jurisdiction of other committees of the Board which also contribute to the stockpile of authenticated and useful data for urban planners. For example, the Board acts as administrator for the National Cooperative Highway Research Program, jointly sponsored by the U. S. Bureau of Public Roads and the American Association of State Highway Officials, using a portion of the money earmarked in the Highway Trust Fund for Research and Planning. Of the two and a half million dollars in the 1964 program, just under \$325,000 will be spent on three research projects in urban transportation. The projects deal with social and economic factors affecting travel, factors influencing model trip assignment, and individual preferences for various means of transportation.

Historically, the concept of origin and destination studies was fostered and developed by Board committees working in cooperation with the Bureau of Public Roads. In perhaps a dozen other related segments of highway research, the urban influence has been a target for study and identification. So it can safely be said that highway research has long been oriented realistically to the wants and needs and preferences of people in a free society. Within the voluntary and cooperative framework of this organization's 43-year span of activities, there may be found the spur to seek what man wants out of life as the ultimate goal of research and planning.

As engineers we should welcome this rising tide of consideration for human factors in the movement toward progress. It does not demean the discipline to subject engineering principles and conclusions to the forge fires of public opinion, or to the rigors of possible contention with other disciplines. Our cities are faced inevitably with certain inundation from vehicular travel, barring only economic collapse or nuclear war. By 1980, there will be 245 million people in this country, 185 million in urban areas. We will be driving 120 million cars, busses and trucks. A hundred and fifty million of us will have drivers' licenses in our pockets and purses. As engineers, we know what must be done: - in mass transit, in new highway construction, in urban renewal. In this era of cooperation it will undoubtedly be more difficult to "move people" than it has been to move mountains. We must research our facts constantly to know and understand the problem. Then we must practice human engineering and get the job done.